**NPS**

***Serving all of DoD***

# Naval Postgraduate School and Distance Education
# Master of Science in Systems Engineering


**By**

**Prof. Wally Owen**

**Meyer Institute of Systems Engineering**

# The NPS Mission

- **NPS exists to:**

  **- Enhance the security of the USA**

  **- Increase the combat effectiveness**

  **of U.S. and Allied Armed Forces**

# NPS: 92 Years of Excellence in Graduate Military Education

**1909** Founded at U.S. Naval Academy to provide the Fleet with a focused Engineering Program

**1951** Post WWII Congress created separate Institution; moved to Monterey, California

**1951** Operations Research Curriculum

**1956** Management Curriculum

**1972** National Security Curriculum and Anti-Submarine Warfare Curricula

**1996** Information Warfare Curriculum

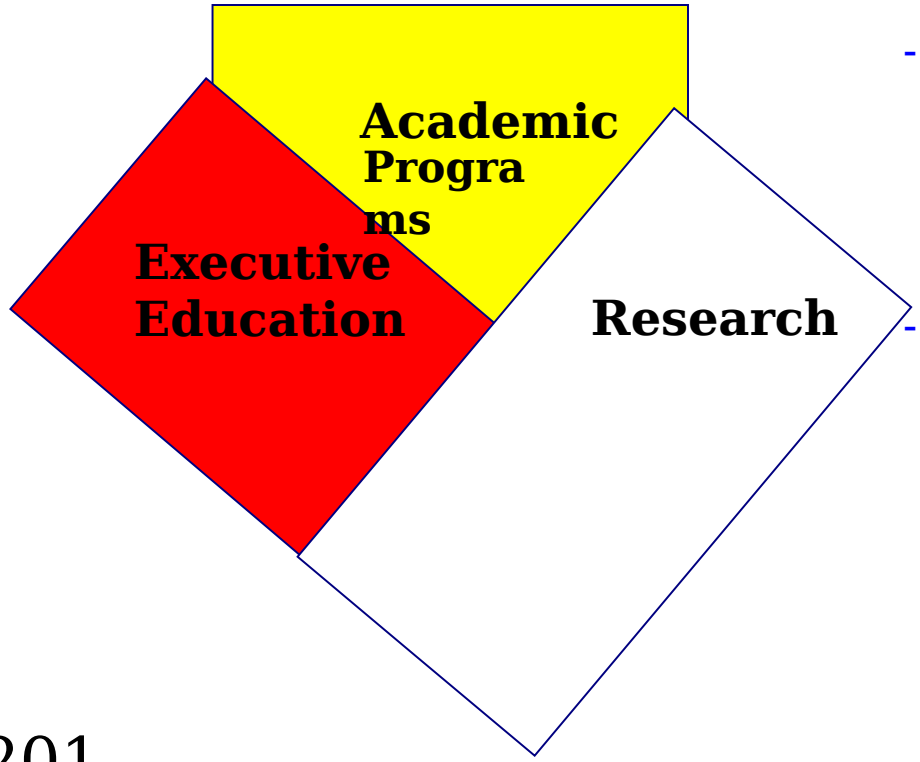
**1999** NWC opened campus at NPS to provide JPME opportunities

Special Operations, Systems Engineering

# NPS TODAY

**Graduate degree programs that support modern war-fighting**

**Fleet relevant through extensive executive and continuing education programs**




- **$43M reimbursable funded research program as an integral part of graduate education**
- **Co-located with other educational and research establishments in an education- rich environment**

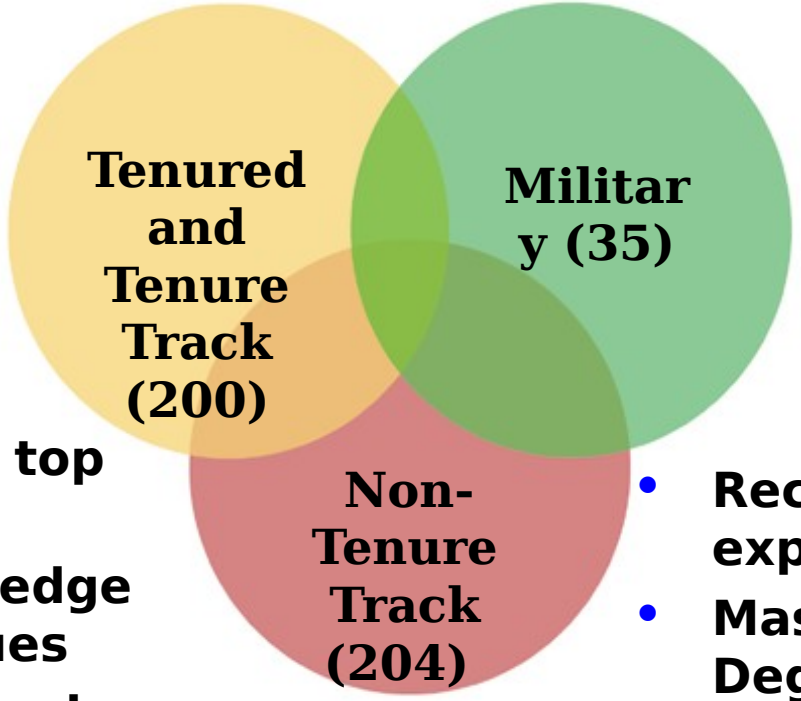
# NPS Academic Accreditation

- **NPS consistently receives excellent ratings from both regional and professional accrediting bodies**
  - ***Western Association of Schools and Colleges (WASC)***
  - ***Accreditation Board for Engineering and Technology (ABET)***
    - Aeronautical, Astronautical, Mechanical, and Electrical Engineering
  - ***National Association of Schools of Public Affairs and Administration (NASPAA)***
  - ***International Association for Management Education (AACSB)***

# Graduate Education at NPS: How We Operate

- Primarily Masters level programs
  - Clear focus on military systems and applications
- Year round operations
- Programs sponsored by Navy or other Defense organizations
  - Reviewed every two years based on Educational Skill Requirements (ESRs)

# An Integrated Faculty




- **Recruited from top PhD Programs**
- **In-depth knowledge of Defense issues**
- **Excellent academic standing**

- **Recent Fleet/service experience**
- **Masters or Doctoral Degrees**
- **Inject focused military view**

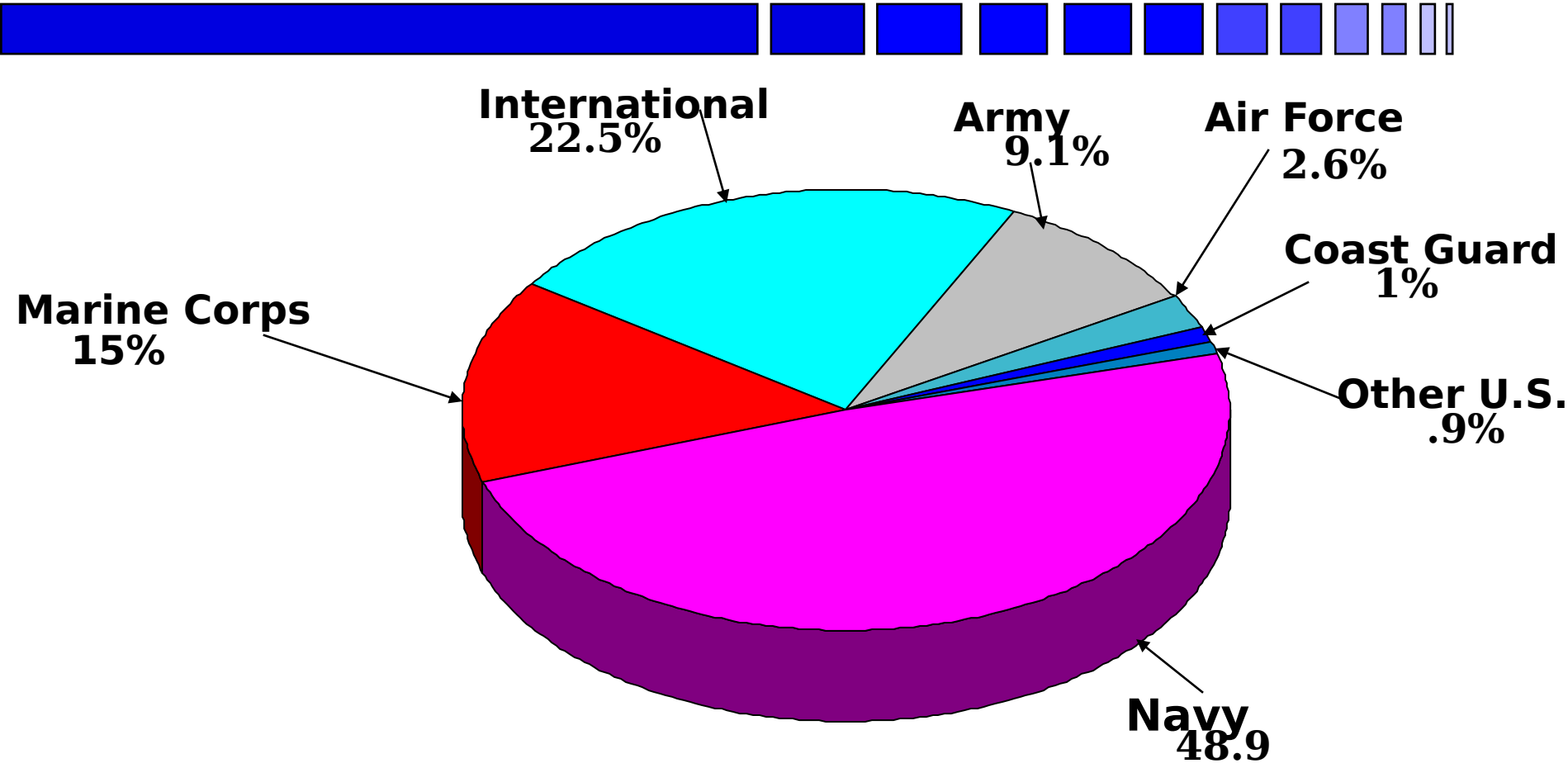
**Civilian Faculty hired under provisions of Title 5 and Title 10 - U.S. Code**

- **"Excepted Service" - subject to Civil Service Laws and Regulations**
- **Faculty Salary Schedule (Level IV of the Executive Schedule)**

# Tenure Track Faculty
# Source of Faculty Degrees

- 14 Stanford
- 12 UCLA
- 12 UC Berkeley
- 7 UC San Diego
- 7 Purdue
- 7 U of Washington
- 7 MIT
- 5 Princeton
- 5 UC Davis
- 6 USC
- 4 Harvard
- 4 Penn State
- 5 Yale
- 4 Cornell Univ.
- 3 Univ. of Maryland
- 4 Georgia Tech
- 3 Arizona State
- 3 Northwestern
- 3 Oregon State Univ.
- 3 Univ. of Michigan
- 3 Case Western
- 3 UC Santa Barbara
- 73 Other PhD's
- 3 Other Doctorate
- 1 Other

# Resident Student Population Winter 02




**Current Enrollment: 1279 plus 182 in Non-Resident Progr**

# International Degree Students
# 44 Countries and 287 Students

**North America**

| | |
|---|---|
| Canada | 3 |
| | 3 |

**South America**

| | |
|---|---|
| Brazil | 16 |
| Chile | 4 |
| Colombia | 1 |
| Ecuador | 1 |
| Mexico | 5 |
| Venezuela | 1 |
| | 28 |

**Europe**

| | |
|---|---|
| Albania | 2 |
| Bulgaria | 4 |
| Croatia | 1 |
| Czech Rep | 6 |
| Estonia | 1 |
| Germany | 9 |
| Greece | 38 |
| Hungary | 10 |
| Moldova | 1 |
| Poland | 5 |
| Portugal | 3 |
| Romania | 3 |
| Spain | 2 |
| Sweden | 2 |
| Switzerland | 1 |
| Turkey | 68 |

**Middle East**

| | |
|---|---|
| Bahrain | 2 |
| Oman | 1 |
| Saudi Arabia | 2 |
| | 5 |

**Africa**

| | |
|---|---|
| Botswana | 3 |
| Djibouti | 1 |
| Ghana | 1 |
| Nigeria | 1 |
| Senegal | 1 |
| So Africa | 1 |
| Tunisia | 7 |
| | 15 |

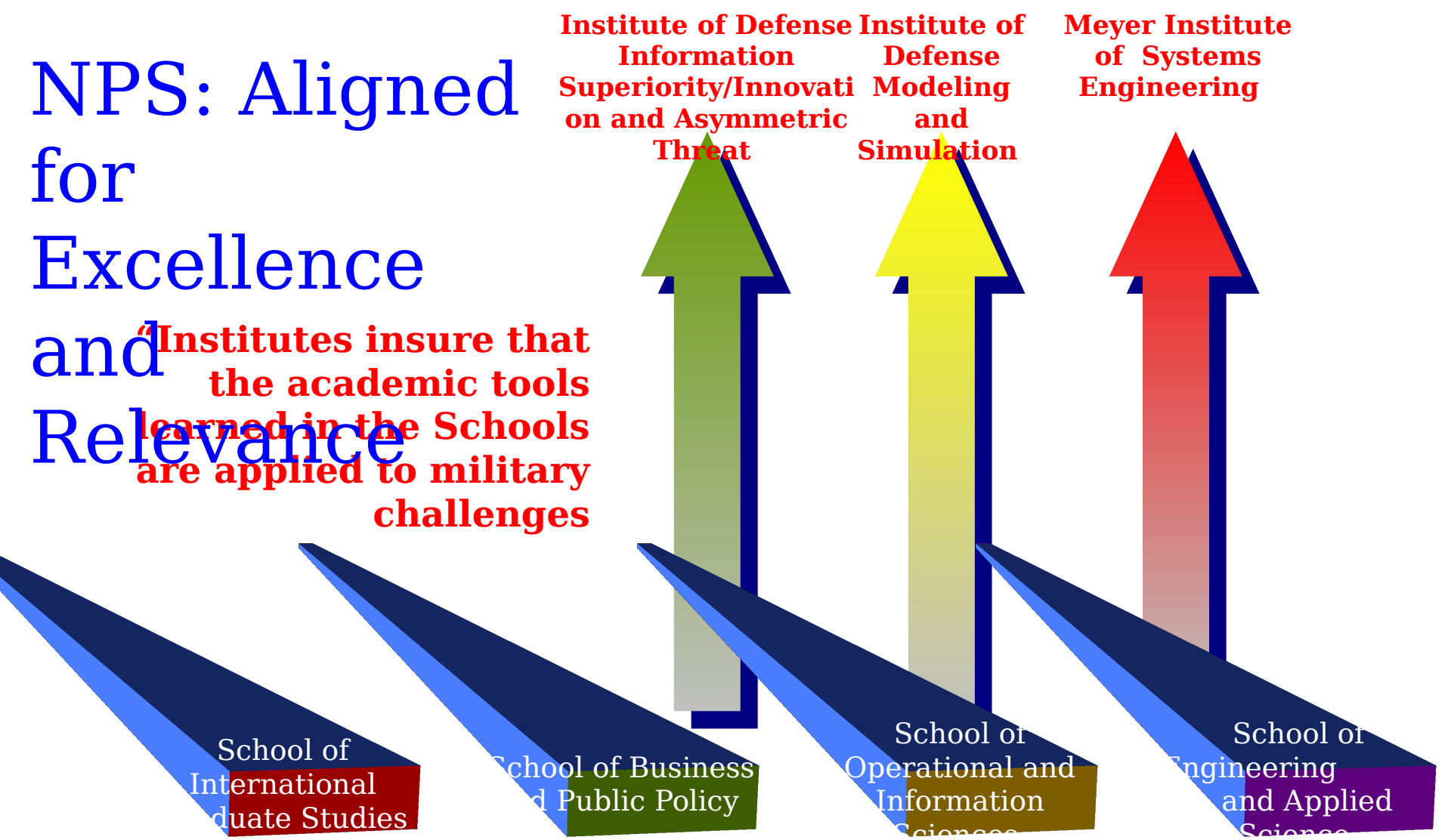
**Far/Near East**

| | |
|---|---|
| India | 1 |
| Japan | 3 |
| Korea | 10 |
| Malaysia | 3 |
| Mongolia | 1 |
| Philippines | 3 |
| Singapore | 31 |
| Taiwan | 7 |
| Thailand | 11 |
| | 70 |

**Australia** 3

# NPS: Aligned for Excellence and Relevance

**"Institutes insure that the academic tools learned in the Schools are applied to military challenges**




**"Graduate schools provide the academic structure needed by our students to cope with future challenges."**

**Military Requirements**

# Graduate School Of Engineering & Applied Science Programs (14 Curricula / 333 Students)

- Aero Engineering
- Aero Engineer Avionics
- Combat Systems
- Underwater Acoustics
- Electronic System Engineer
- Meteorology/ Oceanography
- Applied Math
- Space System Engineer
- Systems Engineering*
- Mechanical Engineering*
- Electrical Engineering*
- Meteorology
- Naval / Mechanical Engineer
- Applied Physics
- Oceanography
- Operational Oceanography
- Test Pilot School - Cooperative

**Resident/ *Non Resident Students - 95**

# Graduate School Of Operations & Information Sciences Programs (16 Curricula / 543 Students)

- Computer Science
- Electronic Warfare
- Information System Technology
- Information Warfare
- Joint C4I Systems
- Modeling, Virtual (SEI) Environments & Simulation
- Software Engineering*
- Space Systems Operations
- Special Operations
- Intelligence Information Management
- Undersea Warfare
- Information System Operation
- Systems Eng & Integration
- Operations Analysis
- Operations Logistics

**Resident /* Non-Resident Students - 26**

# Graduate School Of Business & Public Policy
# Management Programs
# (12 Curricula / 222 Students)

- Acquisition/Contract
- Contract Management *
- Defense System /Analysis
- Financial Management
- Manpower System Analysis
- Leadership Education & Development
- Program Management *
- Material Logistics
- Shore Installation
- Systems Acquisition
- Systems Inventory
- Transportation
- Transportation Log
- Product Development (PD-21) *

**Resident / *Non-Resident Students - 97**

# Distance/Continuing Education Programs

- **Distance Learning Opportunities**

  **- Simultaneous instruction at NPS and multiple remote**

  **- Faculty teams for remote, on-site delivery**

  **- Network based instruction**

- **Distance Learning Programs - Fall 2003**

  **over 30 Sites**

  **over 200 Students**

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# Why DL?

- Accelerate CNO Goal Achievement
- Reinforce People Priority
- Advance Knowledge Superiority
- Improve Recruitment & Retention
- Increase productivity in “slack” periods
- 1 DL Quarter Saves 3 Months student MPN
- 1 Non-Resident Degree Saves 1-2 Years MPN
  + 2 PCS Moves

# DL Approach?

**Convenient, Economical, Accessible Learning for "Customers"**

- Satellite Campus System
- Multi-Site Video Tele-education (VTE) Synchronous
- Web-based education (WBE), Synchronous & Asynchronous, Interactive & Autonomous, Instructor Led/Independent Study
- Blended Education, Integrated Learning

# Satellite Campuses
# Mobile Faculty

- USNA – MA (Leadership & HR)
- NAVSEA 08 @ Washington Navy Yard, MB
- PD21 Partner with MIT- MS in Product Dev
- NSWC-PHD-  MS Systems Engineering (M
- MCTSSA-Corona-Crane partnership-  MSS
- IMET: IDARMP/DHMI/CCMR/DRMI
- Singapore Defense Initiative
- San Diego Satellite campus and others pro
- USS Constellation – Area Briefings

# Web-based Education (WBE)

- Afloat Delivery: Carl Vinson- ISO Certificate (12 students completed satellite course during combat ops)
- ISO MS
- 12 Courses 100% On-Line, 100+ Courses Web Enhanced
- Outsourcing Undergrad Refresher Courses
- SPAWAR – NPS as Educational Broker and Content Source
- JFCOM – Multinational Virtual Learning Environment
- Articulation Agreements – Cal. State

# Video Tele-Education (VTE)

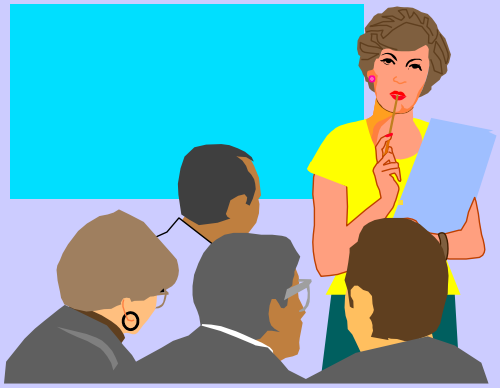
- **Degree programs (n=225)**
  - PD21- MPD (NAVSEA, NAVAIR, SPAWAR, ONR, ANG) (n=39)
  - MS Program Mgmt. (Army DACM) (n=44)
  - MS Contract Mgmt. (Navy DACM) (n=41)
  - MS and PhD in Software Engineering (n=36)
  - MSEE (NSWC- Port Hueneme) (n=53)
  - MSME – Reactors (n=15)
  - MBA (NAVSEA 08) (n=12)

# Interactive Videoconferencing

- **Picture Tel 4000 VTC System**
- **Distance Education Tool**
- **Two-way Video and Audio**
- **High Capacity Integrated Services Digital Networks (ISDN)**
- **Multipoint Capability**

# Training for VTE Faculty

- **Need hands-on experience**
- **Dialing distance sites**
- **Controlling Cameras**
- **Adjusting Audio**
- **Using all multimedia equipment**
- **Creating a Balanced Design**

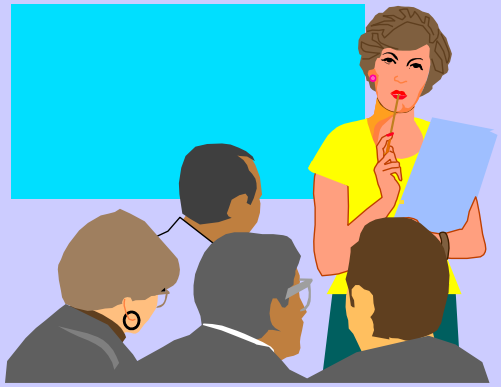


# Web-based Online Courses

- **NPS Distributed Learning Resource Center provides knowledge, know-how and tutorials**
- **BlackBoard Course Management**
- **Faculty take online development courses**
- **Faculty workload adjusted accordingly**
- **Asynchronous with milestone gates**

# Training for Online Faculty

- **Need to learn course management system**
  - **Course Information**
  - **Course Documents**
  - **Assignments**
  - **Discussion board**
  - **Quizzes/exams**
  - **Grading criteria**



- **Need to experience Cyberspace**
- **Creating a Balanced Design**

- **Designed for organizations with a strategic vision to be a world-class systems engineering & integration organization**
- **2 year distance education program using blended approach (mix of onsite, VTE and Online courses)**
- **2 three hour courses each quarter for eight consecutive quarters (16 total)**

- **2 SE certificates plus MSSE degree**
  - **Military SE Fundamentals**
  - **Military SE & Integration**
- **DAWIA SPRDE level III built into core**
  - **ACQ101/201 & PMT250**
  - **SYS201 & SYS301**
- **Capstone Team Design Project replaces the thesis requirement**

- **Entrance requirements:**
  - **Undergraduate degree in engineering or related technical field**
  - **2.5 GPA with strong references and command endorsement**
  - **Other as set by sponsoring organization**
- **Curriculum tailored to meet an organizations' specific needs.**
- **SE CORE consists of 10 courses leaving 6 additional course slots for tailoring**

| | | |
|---|---|---|
| **Masters of Science in Systems Engineering (MSSE)** | | |
| **CORE curriculum lineup with DAWIA SPRDE III as of 11/06/02** | | |
| **SPRDE level III courses *** :SE Core courses ###** | | |
| **Two 3-hour courses a week (all on one day or split on two days)** | | |
| | | |
| **QTR 1-** | | |
| **Course** | | **Faculty** |
| *** MN3221- Principles of Systems Acquisition & Program Mgnt- I ### | | GB |
| *** SI4007 - Fundamentals of Systems Engineering ### | | SE |
| | | |
| **QTR 2-** | | |
| **Course** | | **Faculty** |
| *** MN3222- Principles of Systems Acquisition & Program Mgnt- II | | GB |
| Focused Course- Determined by your specific needs | | TBD |

| | | |
|---|---|---|
| **QTR 3-** | | |
| **Course** | | **Faculty** |
| *** SI4008 - Systems Engineering & Integration ### | | SE |
| Focused Course- Determined by your specific needs | | TBD |
| ***NPS- Military Systems Engineering Fundamentals Certificate Award*** | | |
| | | |
| **QTR 4-** | | |
| **Course** | | **Faculty** |
| *** SI4009 - Systems Architecture for Systems Engineering ### | | SE |
| Focused Course- Determined by your specific needs | | TBD |
| | | |
| **QTR 5-** | | |
| **Course** | | **Faculty** |
| SI4100- Systems Analysis ### | | OR |
| Focused Course- Determined by your specific needs | | TBD |

| | | |
|---|---|---|
| **QTR 6-** | | |
| **Course** | | **Faculty** |
| SI0810- Capstone Design Project- Requirements Generation ### | | SE |
| Focused Course- Determined by your specific needs | | TBD |
| ***NPS- Military Systems Engineering Integration Certificate Award*** | | |
| | | |
| **QTR 7-** | | |
| **Course** | | **Faculty** |
| SI0810- Capstone Design Project- Synthesis of Alternatives ### | | SE |
| SI3011- Eng Economics and Cost Estimation ### | | DRMI |
| | | |
| **QTR 8-** | | |
| **Course** | | **Faculty** |
| SI0810-Capstone Design Project- Concept Definition ### | | SE |
| Focused Course- Determined by your specific needs | | TBD |
| ***NPS Graduation- Master of Science in Systems Engineering*** | | |

- **On Behalf of the Superintendent of NPS and the Director of the Meyer Institute of SE- Welcome Aboard!**
- **Any Questions?**
- **Any Comments?**
- **Any Concerns?**

# For More Information about the MSSE Program

**Visit our MSSE website:**

**http://ocl.nps.navy.mil/msse or contact one of the following at:**

- **Prof. Wally Owen, Senior Lecturer, Meyer Institute of Systems Engineering, serves as MSSE Academic Associate and Program Manager**
  - **(831) 656-2048 at NPS/ (636) 925-2982 in St. Louis Office**
  - **wowen@nps.navy.mil**

- **Prof. Ben Roberts, Ph.D., Director of Distributed Learning, Meyer Institute of Systems Engineering, serves as MSSE Program Manager for Instruction**
  - **(831) 656-2792 at NPS**
  - **broberts@nps.navy.mil**